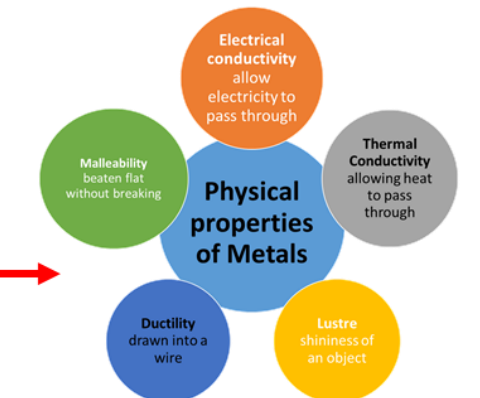
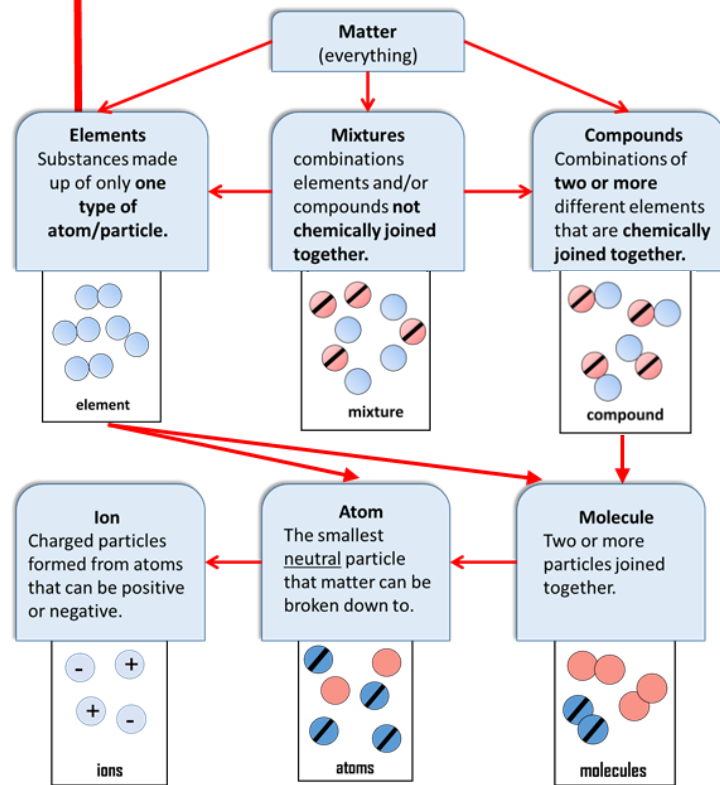


Name	Symbol	Name	Symbol	Name	Symbol	Name	Symbol
hydrogen	H	oxygen	O	phosphorus	P	silver	Ag
helium	He	fluorine	F	sulfur	S	lead	Pb
lithium	Li	neon	Ne	chlorine	Cl	zinc	Zn
beryllium	Be	sodium	Na	argon	Ar	copper	Cu
boron	B	magnesium	Mg	potassium	K	bromine	Br
carbon	C	aluminium	Al	calcium	Ca	iodine	I
nitrogen	N	silicon	Si	gold	Au	iron	Fe

Elements names and symbols



Main physical properties of Metals

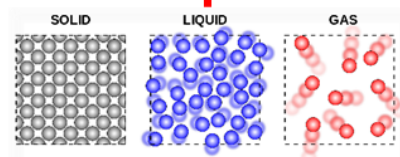
Use of Metals linked to Physical property

Metal	Uses	Property involved
copper	Pipes. Wires. cooking pots	Excellent electrical conductor Good thermal (heat) conductor
aluminium	Aircraft frames wires	Strong and light Good conductor and ductile
Gold (and silver)	Jewellery	Colour, malleable and ductile
lead	Roof flashing	Very malleable
iron	Car bodies Structural steel	Malleable Good heat conductor

Properties of Gases, Liquids and Solids

gas	liquid	solid
takes the shape and volume of its container particles can move past one another	takes the shape of the part of the container which it occupies particles can move/slide past one another	retains a fixed volume and shape rigid - particles locked into place
Spreads to fill container particles have weak bondings so they spread by moving rapidly apart from each other	Does not spread to fill a container particles remain bonded to each other closely and only move past each other but do not spread	Does not spread to fill a container particles are bonded to each other closely and stay fixed in place so do not spread
compressible lots of free space between particles	not easily compressible little free space between particles	not easily compressible little free space between particles
flows easily particles can move past one another	flows easily particles can move/slide past one another	does not flow easily rigid - particles cannot move/slide past one another
Not dense Particles have large spaces between them	Dense Particles move past each other but still remain close	Dense Particles are closely packed to each other

Matter has different properties in different states

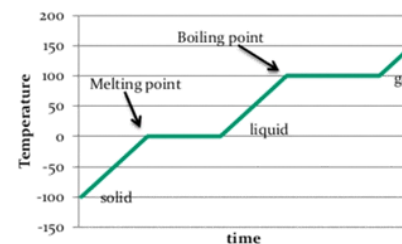
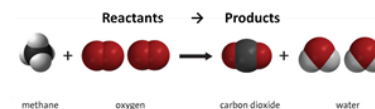


All matter is found in three States

Matter can have physical and chemical changes

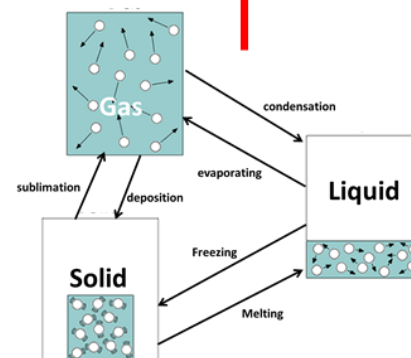
Evidence of Chemical Changes	Examples of Physical Changes
<ul style="list-style-type: none"> Burning wood – temperature change Mixing acid with universal indicator – colour change Seeing bubbles when vinegar and baking soda are mixed – a gas is formed Burning sulphur – creates a new smell 	<ul style="list-style-type: none"> crumpling a sheet of paper melting an ice cube breaking a bottle <p>No change in temperature, colour, gas or smell</p>

Chemical changes create new products



Melting and boiling points of water

Different substances have different melting and boiling points



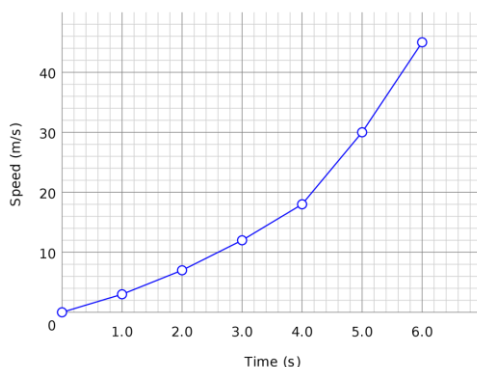
Matter changes states

Separation technique	Property used for separation	example
Magnetic Attraction	magnetism	magnetic iron can be separated from non-magnetic sulfur using a magnet
Decanting	density or solubility	liquid water can be poured off (decanted) insoluble sand sediment less dense oil can be poured off (decanted) more dense water
Filtration	solubility, size of particles	sand can be separated from a solution of sodium chloride in water by filtration
Evaporation	solubility and boiling point	soluble sodium chloride can be separated from water by evaporation
dissolving	solubility	soluble salt can be separated from sand by dissolving into a solvent
Distillation	boiling point	ethanol can be separated from water by distillation because ethanol has a lower boiling point than water

Mixtures can be separated physically

Graphs are used to show patterns in data more easily than a data table. Often processed (averaged) data is used.

Speed of a toy car over 6 seconds



A well drawn line graph must have the following features:

- ☐ A suitable heading
- ☐ Evenly spaced numbered axes
- ☐ Labels with units
- ☐ Correctly plotted line.

Use the acronym SALT when plotting graphs:
Scales Axes Labelling Title

Drawing a line Graph

Scientific investigations are typically written up in a standard way under the following headings:

Aim (focus question): what you are trying to find out or prove by doing the investigation

Hypothesis: what you think will occur when an investigation is carried out

Equipment (or materials): the things that you need to do the investigation

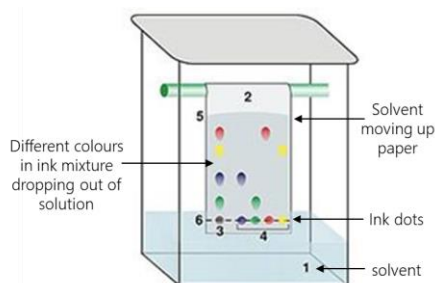
Method: A simple, clear statement of what you will do – and can be repeated by another person

Results: data, tables and graphs collected from investigation

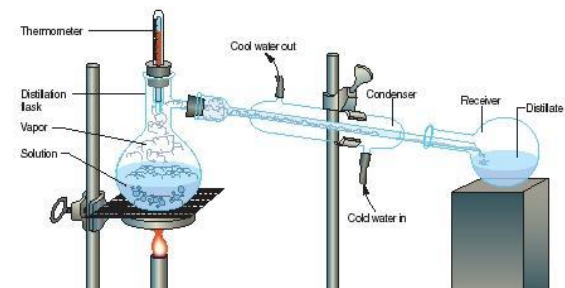
Conclusion: what your results tell you – linked back to the aim and hypothesis

Discussion: Science ideas to explain your results, possible improvements to the investigation, how you managed to control the other variables.

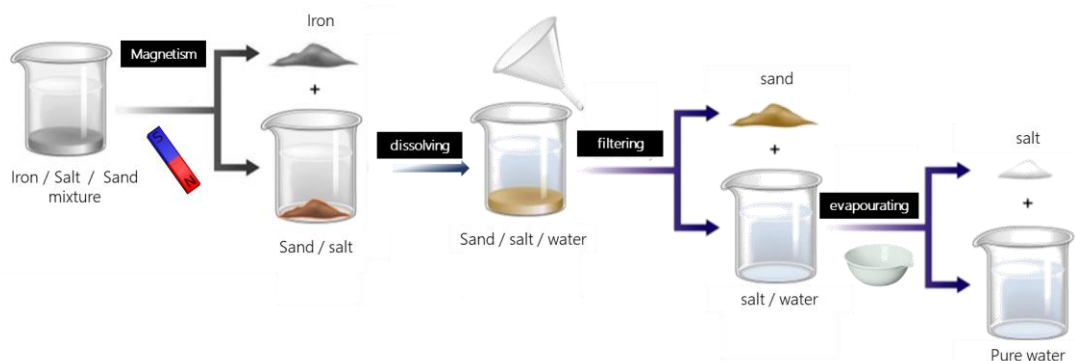
Science Investigations



Chromatography separates ink mixtures



Distillation separates liquids by boiling point



Mixtures can be separated.



Solutions are mixtures

Example	Made up of	Solute	Solvent
Air	Oxygen, other gases in nitrogen	gas	gas
Humid air	Water vapour in air	liquid	gas
Mothballs	Napthalene in air	solid	gas
Soda water	Carbon dioxide in water	gas	liquid
Vinegar	Acetic acid in water	liquid	liquid
Ocean water	Various salts in water	solid	liquid
Amalgam	Mercury in silver, tin, zinc	liquid	solids
Brass	Zinc in copper	solid	solid

Examples of solutions

Ideas for last minute study sheet

1. **10 questions.** Working in pairs. Each student uses the sheet to write 10 questions that could be answered with information on the sheet. The other student could have a different topic sheet. Focus on the students creating specific questions – rather than “what is an acid”, ask “what colour would acid turn blue Litmus paper”. Swap over the question sheets for the other partner to answer (without the sheet). Once finished, use the sheet to check answers. For any answers that are incorrect, use the sheet to correct them.
2. **Concept maps.** Students use the information on the sheet to create a large concept map.
3. **Scaffolded Practice Tests.** Create a short test, either paper or online (i.e. Kahoot, FORMS, Education Perfect), where the students are able to use the sheet to help. Repeat the test (or an alternative) the next day, without the information sheet.
4. **Sticky Notes.** Write summary statements, using information on the sheet, on small post it notes (digital or paper) and find the area of their notes to place it on.